Triangle Sinclair Users' Group

TIMEX

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Part 2 of 2 Parts

Triangle Sinclair Users' Group Officers

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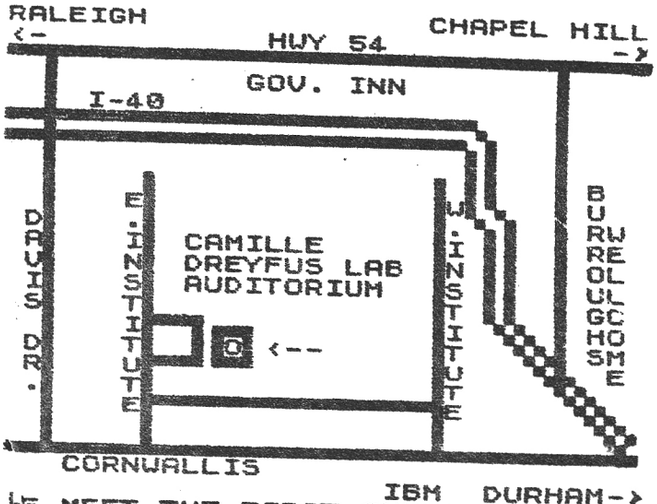
Send mail and inquiries to Doug Dewey if you are not yet a member.

The Triangle Sinclair Users' Group meets once a month on the first Sunday at 2pm in the Dreyfus Auditorium of the Research Triangle Park facility just off of Cornwallis Rd.(see the map below). The public is welcome, in fact the public is invited. Membership in our users' group is $10.00 a year and now is the time to send in your contribution. We have a large public that we serve, and we need sustaining contributions in the form of money, articles for the newsletter, or ocasional letters telling us you are still interested in receiving our publication. The donation of goods and monies by members and business friends alike, is a welcome occurence and is also tax-deductible.

WE MEET MAY 6th AT 2:00 pm IN DREYFUS

At our May meeting Hiawatha Demby will be demonstrating a pseudo-ROM board of his own creation. It is somewhat similar to a Hunter Board but Hiawatha says there are two main differences: his board allows for user defined graphics and also his board will be available as a kit for a very minimal price. I understand that the kits will be available for purchase at our May meeting. Here is a way of beating out everyone who just bought a 2068 and showing the world once again that the TSZX with 16K offers amazing power equal to the best the competition can offer: as a VESPA is to a CADILLAC so is a TSZX to a 2068.

A LETTER AND PROGRAM



FROM CHARLIE DAY IN GASTONIA

'RAMEX' has a $99.00 modem for the T/S 1000 and T/S 2068. I'm trying to to find out more about it. RAMEX also has a very nice word pro. for $49.95. It has some exciting features line 64 characters per line, (on T.V. or Monitor), and can print 64 characters per line to the Timex 2040 printer. They also have a print utility to allow you to display 64 characters to the screen for $19.95.

That's enough on Ramex. I would like to know if there is any mass storage device for the 2068 that cost around $150. I really need something besides a recorder. Of couse I would love to be able to use the micro drives.

Now to the next word of business. Me and my 2068 have been busy lately. We recently beat out a couple of Apples, Ataris, Commodores, and Radio Shake computers for first place in the Gaston County Science Expo '84. I was so happy to show all those people who had laughed at my computer just what it could do. My program was called 'Chemistry Assistant'. It was designed to help a chemistry student. I would love to sell copys of the program but I have no idea where to begin. If you know of anyone who could help me I would appreciate it very much.

I've enclosed a simple game I wrote. I think it is a neat game. I plan to use it as part of a program I'm working on now. After you have mastered the game try changing line 70 to read FOR h=4 to 21 STEP 2.

Keep up the good work!

Sincerely yours,

Charlie Day

Charlie Day

3101 Imperial Dr.
Gastonia, NC 28054

```
  2 BORDER 1: PAPER 0: INK 7: C
LS
  3 LET c=1: LET s=0: LET a=0
  5 FOR i=1 TO 20: PRINT INK 7;
AT (RND*20),(RND*31);".": NEXT i
  6 PRINT AT 1,2;"Ship 0   Scor
e 0   Alien 0 "
  10 LET s=0: LET m=14
  30 FOR i=0 TO 100
  40 LET r=INT (RND*3)
  50 LET p=13-(12 AND r=0)+(12 A
ND r=2)+INT (RND*5)
  60 LET p$="p"+("+1" AND r=0)+(
"-1" AND r=2)
  70 FOR h=4 TO 21
  71 RANDOMIZE
  80 LET p=VAL p$
  90 IF (INKEY$="6" AND m<28) TH
EN LET m=m+2
  91 IF (INKEY$="5" AND m>2) THE
N LET m=m-2
  110 PRINT INK 2;AT 21,m-1;"▗▄▖
";INK 6;FLASH 1;"▟▙";FLASH 0;INK
 2;"▜▛";AT h,p-1;FLASH 1;INK 5;
"▗▄▖";INK 4;FLASH 0;"▟▙";INK 5;
FLASH 1;"▜▛";AT 24-h,m;FLASH 0;
INK 3;"*"
  111 PRINT INVERSE 1;AT 1,27;i
  114 SOUND 7,62;8,15
  115 SOUND 0,210
  120 IF h=12 AND m>p-2 AND m<p+2
 THEN GO TO 180
  121 IF h=20 AND m>p-2 AND m<p+2
 THEN GO TO 300
  125 SOUND 7,0;8,0
  126 PRINT AT 21,m-1;"     ";AT h,
p-1;"     ";AT 24-h,m;" "
  130 NEXT h
  140 NEXT i

  170 STOP
  180 LET s=s+10
  181 PRINT INVERSE 1;AT 1,17;s
  185 SOUND 6,6;7,7;8,16;10,16;12
,56;13,8
  190 FOR j=1 TO 8
  200 PRINT INK (RND*6)+1;AT h-1,
p;"*";TAB p-1;"***";TAB p;"*"
  210 PRINT INK (RND*6)+1;AT h-1,
p;"▗";TAB p-1;"▟▙";TAB p;"▖"
  211 PRINT INK (RND*6)+1;AT h-1,
p;" ";TAB p-1;"   ";TAB p;" "
  215 NEXT j
  216 SOUND 8,0;8,0;10,0
  217 PRINT AT 21,m-1;"     ";AT h,
p-1;"     ";AT 24-h,m;" "
  220 GO TO 140
  300 SOUND 7,62;8,15
  301 LET C=C+1: IF C>=7 THEN LET
 C=1
  303 LET a=a+1: PRINT INVERSE 1;
AT 1,7;a
  305 FOR j=0 TO 30
  306 SOUND 0,j
  310 PRINT FLASH 1; INK (RND*6)+
1;AT 21,m-2;"▗▄ ▄▖";AT 20,m-3;"▗
▄ ▄▖";AT 19,m-4;"▗▄ ▄ ▄▖"
  340 NEXT j
  341 IF a>=4 THEN GO TO 160
  345 BORDER c: PAPER 0: CLS
  346 FOR j=1 TO 20: PRINT INK 7;
AT (RND*20),(RND*31);".": NEXT j
  347 PRINT AT 1,2;"Ship    Scor
e     Alien "
  348 PRINT INVERSE 1;AT 1,7;a;AT
 1,17;s;AT 1,27;i
  350 GO TO 140
```

SYNTAX IS YOUR BEST BET FOR TSZX AND 2068

We have seen SYNTAX make it through the thick and the thin. And at $29.00 for a 12 to 15 month subscription, some critics have said it was overpriced. But as we look back over all recent and distant issues, we can see that it has always had in it very valuable information. We think it is one of the five best buys of all time for Timex Sinclair owners. Here is a typical, simple article in a recent issue. We urge you to subsribe today. Call 617-456-3661 for all charge cards, write to SYNTAX, RD 2, Box 457, Harvard, MA 01451

TS2068 PORT ASSIGNMENTS

Timex provided SYNTAX with the following chart, referred to on page 214 of your 2068 manual. This chart is what you would receive if you contacted Timex Corporation for port assignments.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0																
1																
2																
3																
4																
5																
6																
7				9				9								
8	6	6	6	6				A	6	6	6	6				
9	6	6	6	6					6	6	6	6				
A	6	6	6	6					6	6	6	6				
B	6	6	6	6					6	6	6	6				
C	6	6	6	6					6	6	6	6				
D	6	6	6	6					6	6	6	6				
E	6	6	6	6					6	6	6	6				8
F	6	6	6	6	2	4	5	8	6	6	6	6	7	7	1	3
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

In the table, the vertical borders show the most significant hex digit and the horizontal borders show the hex digit of less significance. Table entries indicate devices from the numbered list that follows.

1. RD Keyboard/Cassette
   WR Border/Beep/Cassette
2. RD/WR Dock Horizontal Select
3. RD/WR Enhancement Port
4. WR Sound Chip Address
5. RD/WR Sound Chip Data
6. TS2040 Printer
7. Bank Switching
8. Micro-Drive
9. Modem
A. RD/WR Centronics Interface

Blanks in the table indicate ports available for use as of 2 Nov. 83.

*) I'm enclosing an article I wrote for S.U.N. last year which never got published. Feel free to doctor it or use it in any way you like.

Well that's about it. I well you and your organization well. I hope things become more stable in the Sinclair world. Take care.

As we have all heard many times, machine language is good for doing things much much faster than BASIC. If any of you have wondered just what real applications it might apply to here is a very useful application of a machine subroutine. The routine is based on a Z80 instruction call LDIR.

What LDIR does is transfer with lighting speed a block of memory from one place to another. This can extremely useful in transfering screens or parts of screens stored in memory. For example a BASIC program which prints 40 numbers and separate names, as in an opening menu, can take more than 5 to 10 seconds to print up to the screen even in fast mode. This waiting time can be annoying in a program which uses a menu like this over and over. However, a similar screen LDIR 'ed so to speak into place can take all of 1/4 of a second.

How does LDIR work? Well,first the instruction transfers the byte at the location pointed to by the HL register to the location pointed to the DE register. Secondly it increments the HL and DE registers by one. Thirdly, it decrements the BC register pair by one and if the BC register does not go to zero then the instruction keeps repeating itself until the register is zero. The Z80 then goes to the next instruction. What this does is move a block of memory from one place to another. That block of memory could be your screen.

To use LDIR you load the HL (start) register with the address of the start of your program you want to transfer. Then you load the BC (byte count) register with the number of bytes in your program. Next, you load the DE (destination) register with the starting address of where you want to transplant your program. These addresses are generally represented in hexidecimal. Lastly you LDIR which transfers a copy of your program to the address designated. To return to BASIC your very last instruction should be a RET (return).

You can save a screen into free memory,a rem statement, or above RAMTOP then when you need it you can call it up in less than a second. The following two programs will demonstrate LDIR on a TS100 with 16K:

PROGRAM 1: (to store a screen from the display)

1) For 16k Poke 16388,224 and Poke 16389,124 then NEW (to set RAMTOP)
2) Poke in the following program starting at address 31968

memonic	hex	decimal equivalent
LD BC 758d	: 01 F6 02	1 246 2
LD HL (D-File)	: 2A 0C 40	42 12 64
INC HL	: 23	35
LD DE 7CFF	: 11 FF 7C	17 255 124
LDIR	: ED B0	237 176
RET	: C9	201

PROGRAM 2: (to display a stored screen)

1) Poke the following program starting at address 31981:

memonic	hex	decimal equivalent
LD BC 758d	: 01 F6 02	1 246 2
LD DE (D-FILE)	: ED 5B 0C 40	237 91 12 64
INC DE	: 13	19
LD HL 7CFF	: 21 FF 7C	33 255 124
LDIR	: ED B0	237 176
RET	: C9	201

3) Write a BASIC program which generates the screen you want to save and load it into the computer with the preceeding program in place above RAMTOP.

4) Pause 40000 after screen is printed then RAND USR 31968
   The screen will be stored above RAMTOP.

2) RAND USR 31981 to bring up stored screen

Notes: Screen doesn't have to be stored above RAMTOP. It can be stored in a string or in free memory or even in a REM statement. The advantages of storing in free memory or above RAMTOP is that the listing of the program will not be affected. The advantages of storing the code below RAMTOP somewhere is the the screen can be saved with the rest of the program.

PROGRAM 3: Sample program to test STORE and SAVE

NOTE... Enter consecutively the decimal #'s from program #1 and program #2 . DONT FORGET TO POKE RAMTOP LOWER FIRST.

```
5   PRINT "STARTING ADDRESS?"
10  INPUT I
20  PRINT "ENTER 999 TO QUIT."
30  INPUT N
40  IF N = 999 THEN GOTO 80                    ...EXIT POKE ROUTINE
50  POKE I,N
60  PRINT PEEK I;"  ";
70  GOTO 30
75  REM                                  ...PAINTING SECTION OF PROGRAM
80  CLS
90  PRINT "SAMPLE SCREEN...PRESS ANY KEY"
95  PRINT "PRESS SHIFT AND Q TO SAVE SCREEN"
100 LET A$ = INKEY$
105 IF A$ = "" THEN GOTO 100
110 PRINT A$;
120 IF A$ = CHR$ 192  THEN GOTO 200
130 GOTO 100
200 RAND USR 31968
210 CLS
220 LIST 235
230 STOP
235 REM  RUN 240 TO RETRIEVE SCREEN
240 CLS
250 RAND USR 31981
260 STOP
```

KNIGHTED COMPUTERS
707 Highland St.
Fulton, New York 13069

April 19, 1984

Triangle Sinclair User's Group
c/o Douglas Dewey
206 James St.
Carrboro, NC 27510

Dear Mr. Dewey,

Thank you for sending us a copy of your membership newsletter, and thanks for mentioning us in your newsletter. We do have a phone number it is (315)593-8219, we are not yet listed in the phone book, but intend to have that taken care of by the time the next phone books are made. We also are very proud to announce that we not yet had a disatisfied customer (to the best of our knowledge). We have a policy of shipping orders fast, and if we cannot for any reason ship merchandise to a customer within two weeks, we write and tell them why.

We have enclosed a copy of our latest offering which we are now mailing out to Timex users that have written to us requesting what merchandise we carry. This offer will change soon (deleting the Timex supplied TS2068 software). We have a large number of T1000 software available to us, but we have not in the past handled any software for the TS1000/TS1500 and honestly have not had enough requests for us to handle that software. We could very easily offer TS1000 software (made by Timex) for about $3.50 for any program.

Again, thank you for mentioning us in your newsletter. We do expect to be advertising in these types of publications in the near future and will definately consider your publication. We're trying to get the OK from Sinclair Ltd. to handle the QL, and already have made arrangements with a third party for software for the QL.

Sincerely,

Raymond A. Payne

incl. MAY/JUNE Price List

KNIGHTED COMPUTERS
707 Highland St.
Fulton, N.Y. 13069

MAY/JUNE 1984

HARDWARE AND SOFTWARE FOR THE TS2068

- - H A R D W A R E - -

AERCO Centronics Parallel Interface - makes most any Dot Matrix Printer compatible with the TS2068 - includes driver software and cable. $64.95

AERCO Dual RS232 Interface - brings compatability with most letter quality printers and modems. TWO serial devices can be connected at a time, adjustable data transfer rate from 300 to 19200 baud. - - $89.95

Inforunner RITEMAN 9X9 Dot Matrix letter quality printer (the one used to make this offer), 120 CPS, pin feed or friction feed allows you to use your own stationary or fan fold paper (tractor feed optional) $349.95

PANASONIC DT1300D COLOR MONITOR (Switchable Composite or RGB) $397.00

TS2040 PRINTERS (while they last) - $69.95

TS2040 Printer Paper - three rolls per package - - $5.95 (PER PACK)

- - S O F T W A R E - -

WORDPROCESSORS written by Robert Fingerle (on cassette)

TEXTWRITTER 2000 A high capacity full color word processing program for the TS2068 computer and TS2040 Printer. It is similar in design to the TEXTWRITER 1000 program for the TS1000 computer that has had excellent reviews in computer publications. Powerful operation and edit functions that are logical and easy to learn. -- $17.95

TEXTWRITER 2000+ Basically the same as TW2000, except for use with full size dot matrix printers (using the AERCO Centronics parallel interface). -- $24.95

INFORMATIVE LETTER FROM DOUG SMITH, TIMEX' DIRECTOR OF PRODUCT/MARKET PLANNING

Dear Timex Sinclair 2068 Owner:

Thank you for your recent request for technical information on the 2068 computer. Available information is as follows.

A large size schematic diagram of the T/S 2068 may be purchased for $2.50 (postage included) from the Timex facility in Little Rock, Arkansas (address listed below). The schematic will be available starting April 1, 1984.

A comprehensive Technical Manual will also be available from Little Rock, starting May 1, 1984. The manual is quite lengthy and will be priced at $25.00 (postage included). It includes a reduced size schematic diagram. The Manual includes an updated and corrected version of all of the material which previously had been made available as the "Timex Sinclair 2000 Third Party Software Guide". It also contains additional information, some of which has been published as Technical Notes or Bulletins. This Manual includes ALL technical information which is available from Timex for the T/S 2068. Subjects covered include memory, bank switching, block diagram, I/O facilities, I/O port layout map, interface with external devices, connector specifications, character set, system software, commands available on the 2068 but not on the ZX Spectrum, advanced video modes, connection of RGB Monitor and other information.

The address for both the schematic and Technical Manual is as follows:

Timex Materials Sales Division
P.O. Box 1378
Little Rock, Arkansas 72203

The information described above is the ONLY technical information that is available for the T/S 2068 computer. No information is available for products which have not yet been shipped, including the Modem, System Interface Unit, 80-Column Printer, or Microdrives. Accessories and peripherals marketed for the ZX Spectrum will not, in general, directly interconnect with the T/S 2068. We have no information on modifications required for such an interconnection.

Thank you for your continued interest in the T/S 2068.

CHAPTER 23
IN and OUT

Summary
OUT
IN

The processor can read from and (at least with RAM) write to memory by using **PEEK** and **POKE**. The processor itself does not really care whether memory is ROM, RAM or even nothing at all; it just knows that there are 65536 memory addresses, and it can read a byte from each one (even if it's nonsense), and write a byte to each one (even if it gets lost). In a completely analogous way there are 65536 of what are called *I/O ports* (standing for Input/Output ports). These are used by the processor for communicating with things like the keyboard or the printer, and they can be controlled from the BASIC by using the **IN** function and the **OUT** statement.

IN is a function like **PEEK**.

IN address

It has one argument, the port address, and its result is a byte read from that port.

OUT is a statement like **POKE**.

OUT address, value

writes the given value to the port with the given address. How the address is interpreted depends very much on the rest of the computer; quite often, many different addresses will mean the same. On the Spectrum it is most sensible to imagine the address being written in binary, because the individual bits tend to work independently. There are 16 bits, which we shall call (using A for *address*)

A15, A14, A13, A12,....., A2, A1, A0

Here A0 is the 1s bit, A1 the 2s bit, A2 the 4s bit and so on. Bits A0, A1, A2, A3 and A4 are the important ones. They are normally 1, but if any one of them is 0 this tells the computer to do something specific. The computer cannot cope with more than one thing at a time, so no more than one of these five bits should be 0. Bits A6 and A7 are ignored, so if you are a wizard with electronics you can use them yourself. The best addresses to use are those that are 1 less than a multiple of 32, so that A0,...A4 are all 1. Bits A8, A9 and so on are sometimes used to give extra information.

The byte read or written has 8 bits, and these are often referred to (using D for *data*) as D7, D6,...., D1, D0. Here is a list of the port addresses used.

There is a set of input addresses that read the keyboard and also the EAR socket.

The keyboard is divided up into 8 half rows of 5 keys each.

IN 65278 reads the half row **CAPS SHIFT** to **V**
IN 65022 reads the half row **A** to **G**
IN 64510 reads the half row **Q** to **T**
IN 63486 reads the half row **1** to **5**
IN 61438 reads the half row **0** to **6**
IN 57342 reads the half row **P** to **7**
IN 49150 reads the half row **ENTER** to **H**
IN 32766 reads the half row **SPACE** to **B**

(These addresses are 254+256*(255−2↑n) as *n* goes from 0 to 7.)

In the byte read in, bits D0 to D4 stand for the five keys in the given half row – D0 for the outside key, D4 for the one nearest the middle. The bit is 0 if the key is pressed, 1 if it is not. D6 is the value at the EAR socket.

Port address 254 in output drives the loudspeaker (D4) and the MIC socket (D3), and also sets the border colour (D2, D1 and D0).

Port address 251 runs the printer, both in reading and writing: reading finds out whether the printer is ready for more, and writing sends out dots to be printed.

Port addresses 254, 247 and 239 are used for the extra devices mentioned in Chapter 22.

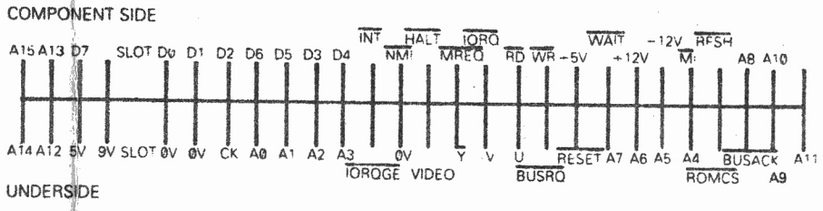
Run this program

```
10 FOR n=0 TO 7: REM half-row number
20 LET a=254+256*(255-2↑n)
30 PRINT AT 0,0; IN a: GO TO 30
```

and play around by pressing keys. When you get bored with each half-row, press **BREAK** and then type

```
NEXT n
```

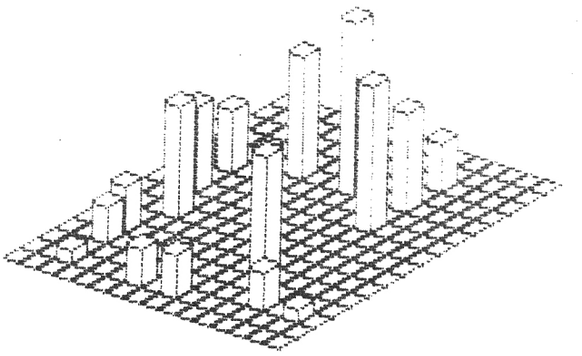
The control, data and address busses are all exposed at the back of the Spectrum, so you can do almost anything with a Spectrum that you can with a Z80. Sometimes, though, the Spectrum hardware might get in the way. Here is a diagram of the exposed connections at the back:

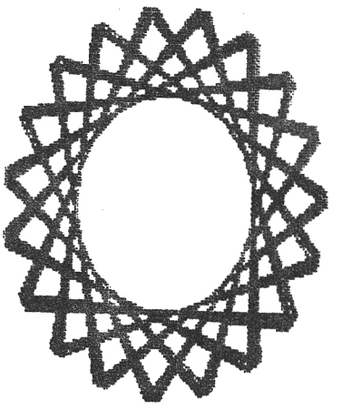

COMPONENT SIDE
A15 A13 D7 SLOT D6 D1 D2 D6 D5 D3 D4 INT NMI HALT MREQ IORQ RD WR -5V WAIT +12V -12V M1 RFSH A8 A10
A14 A12 5V 9V SLOT 0V 0V CK A0 A1 A2 A3 0V Y V U RESET A7 A6 A5 A4 BUSACK A11
IOROGE VIDEO BUSRQ ROMCS A9
UNDERSIDE

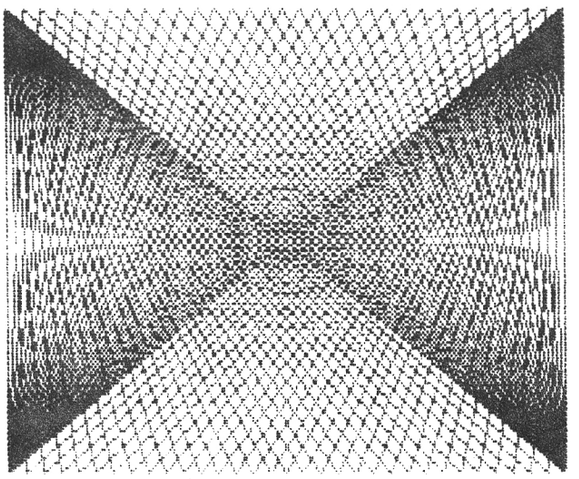
CHAPTER 23 OF THE SPECTRUM USERS MANUAL REVEALS INFORMATION USEFUL ON 2068

Here is Chapter 23 of the SPECTRUM Manual. Many of you have asked about IN and OUT. Along with an article printed from SYNTAX, you have a lot of information to get you going on your I/O connections.

seem to indicate that you really can become very good at touch typing on the 2068. I am not entirely sure that I will ever become very good with that keyboard. Sure it's an improvement, but touch type on the chiclets, come on, JRC! Plus, the keyboard is complex to the point of distraction; Sinclair was wise to abandon one stroke Keyword entry on the QL. Don't get me wrong, though, I love my 2068--it's just that it is not without its faults. Still, I suppose that if you would like to use the 2068 to learn to touch type, and haven't got a typewriter or better keyboard, then TYPE will be adequate to the task.







DURHAMFEST, COMPUTER PAPER FORTH AND COMPUTER CAMPS THE 2068 and 2-BIT SOFTWARE

The Durham Hamfest called the DURHAMFEST will take place Saturday, May 19th, 1984, in South Square Mall under the large parking deck.

The least contrast paper for the 2040 printer is that available from TIMEX, the next level of contrast is achieved using the ALPHACOM 42 paper (available from BRENDLES and BESTS and other chain stores), and the greatest contrast is achieved using the RADIO SHACK 26-1332 paper (a little smaller in width for their TP-10 printer). The 2040 produces smudgy print using the TP-10 paper and our "sdk" routine for the 2068 computer; the paper is seemingly too sensitive. But graphics and other printouts look great. The best choice seems to be the ALPHACOM 42 paper available in black or blue print (Alphacom makes the 2040 printer!). If you send us a printout, try to get your work looking as presentable as possible; better yet, send us a tape and we'll take the needed care.

Mike Hicks has given us the following two special items:
PRINT #ϕ;"HELLO":PAUSE ϕ will print "HELLO" on the 24th line. Try it!
By pressing Extended mode and then Graphics mode you can get flashing characters, but I don't know how to get out; if you find a way, please let me know--Mike Hicks.

The number for the FORTH Bulletin Board is (415)538-3580.

YMCA and YWCA CAMP KANATA, located close to Wake Forest, NC, is offering a computer camp component to their summer camp this year. It will be presented by The Texas Instruments Learning Center, a group out of California; the extra fee for computer instruction which consists of two hours every afternoon during the entire week-long session, is $100. The program sounds good; though overpriced, it would be difficult to do such an activity on a commercial basis for less if done properly--no more than two campers per computer, for instance. Camp Kanata computer instruction will focus on LOGO, and 10 to 12 hours of LOGO instruction will definitely be enough in most cases to give campers a very good initial foundation in this language as well as some experince with the TI 99/4A. Write to Camp Kanata, Rt. 3 Box 192, Wake Forest, NC 27587.

2-BIT SOFTWARE, P. O. Box 2036, DEL MAR, CA 92014 (619)481-3242 is offering a whopping 50% off their TSZX offerings, which consist of 2K Educational/Computer Literacy/activity/game programs. The hitch is that we must order at least 6 or more tapes, but they offer a $5 off coupon for fewer tapes. One good feature is the extension of this offer though July 4th, 1984.

HI RES and OTHER MATTERS
By BILL ROBERTS

A nice program for the TSZX computers is put out by PRISM. The program is called "High-Res Package". For those who have never seen a high resolution graph on a TSZX, this program will "blow your mind".

The program is about 3/4K long. It is all machine code and is stored in a 0 REM statement. The normal display is still avaible while the high resolution screen is stored starting at 26368. In reality, there are only 128 different dot patterns possible (not 256) and some of these are repeated. Even so the actual graphics are almost as good as truly addressable graphs of 256x192.

Eight USR commands are provided in the program. These are: CLS; INVERT; HIGH RESOLUTION SCREEN; NORMAL SCREEN; SAVE (save display); LOAD (load display); PRINT (a character is 1/8 the normal size); and PLOT.

I have used the PLOT command the most. I am really pleased with the results. HOWEVER, there is a fly in the ointment. There is no way provided to get a copy of the screen to the 2040 printer or for that matter, any printer! With Doug's help I may be getting close to solving the problem. If anyone has a suggestion, I would love to hear it. I paid &19.95 for the program and got it from PRISM MICROPRODUCTS. The address was 49 La Salle Avenue, Buffalo, N.Y., 14214. This is the same address for the now bankrupt TIMEX SINCLAR USER mag. Who knows, this program may now be in the public domain. Another address to try (it was on the cassette) is: INTERNATIONAL PUBLISHING SOFTWARE Inc., 3948 Chesswood Drive, Downsview, Ontario, Canada, M3J 2W6.

G. RUSSELL - ELECTRONICS, RD 1 Box 539, Centre Hall, Pennsylvania 16828, has a COMPCOOLER for TSZX computers. This device "makes your computer run cool by reducing the voltage applied to your 9V DC jack". No hardware changes are needed and the device will take up to 750 ma. I tested the device on a computer with a CAI/O board, a 16K ram pack, and the 2040 printer. In addition the regulator heat sink was three times larger than normally found on a TS 1000. Normally, after 1 hour, the hottest part of the case is 39 degrees C. With the compcooler in the line the temperature, after 1 hour was 37 degrees C. The temperature reduction may actually be better than measured because the computer CASE, not the actual regulator itself, was measured. The price for the compcooler is $7.95 postage included.

Here is some good news for those who have a CAI/O board. You can run any 2716 EPROM in the left (component side) socket. The right most socket can be used with any 2716 compatable RAM but only 1K can be used. This is because of hardware. The center socket could also be used if the STRINGY FLOPPY is not needed. A good EPROM to consider is the PROGRAMMERS UTILITY EPROM. This is put out by DELPHIC ENTERPRISES, P. O. Box 72205, Corpus Christi, TX 78472. The tape version of this highly recommended and quite fantastic EPROM is available from SYNCWARE Co., P.O. 5177, El Monte, CA 91734. We have not actually tried this utility in this socket but this is the word from CAI. CAI also said that while they do not sell any products for the TSZX now, they will continue to support their TSZX products.

TWO EXCELLENT 2068 GAMES
By JOHN DEWEY

VOICE CHESS, $21.75
In VOICE CHESS you challenge the computer. VOICE CHESS allows all legal chess moves and indicates if you move illegally. While playing chess you enjoy the computer's funny remarks as it actually talks to you. A digitized voice speaks through the computer's speaker advising you of its moves, recommending moves for you and making facetious remarks. You can analyze your game, save games in progress, print out games, and you can change colors and levels at any point in a game. The prices given are for the games if you order them from DATACOM, P.O. Box 775, Kernersville, NC, 27284. They have excellent prices for TSZX and 2068 software. I would rate VOICE CHESS a 3.7 out of 4. Both of these games are by SOFTSYNC.

CYBERZONE $16.00
CYBERZONE, an enhanced version of the game ZX DESTROYER, is a great game. Although I only have a black and white TV, I think that the color must be very good. CYBERZONE is a lightning fast arcade game for which you really need a joystick (or maybe two joysticks) and fast reflexes to outmaneuver Cyber's space ship which has deadly accurate lasers that strike quickly.
It has 5 levels of play, each faster than the preceeding level. On level one Cyber's lasers don't fire at all; on level two they fire sometimes; and on levels three through five they always fire!
On all levels of play Cyber gives you an added danger in his bomber spacecraft which constantly bomb you and his flying saucer which deflects your laser fire. You can't destroy Cyber's saucers with your laser but must trick Cyber into destroying the saucer for you! Play against the computer, command Cyber's bomber-spacecraft or play against a friend. For skill and quick reflexes and a fun time, I recommend CYBERZONE. You can use keyboard and joysticks and can even activate your laser by saying "FIRE" into a microphone hooked to a tape player connected to the computer. But joysticks are faster. I would rate CYBERZONE a 4 out of 4.

TWO "DRAW" & "PLOT" PROGRAMS
BY GUY QUALLS

Here are two fine programs for the 2068 using several of the new commands. In our next issue we will present Guy's PHONEBOOK program. Guy's address is: Guy Qualls, 4201 Dimmitt Rd. #38, Plainview, TX 79072.

```
  10 PRINT "Draw joystick needed
"''''''"HIT ANY KEY TO START": PA
USE 0
  15 CLS
  20 LET a=130: LET b=75
  30 PLOT a,b: INK 0
  37 IF STICK (1,1)=5 THEN LET b
=b+1: LET a=a-1
  40 IF STICK (1,1)=1 THEN LET b
=b+1
  45 IF a<0 THEN LET a=0
  47 IF STICK (1,1)=6 THEN LET a
=a-1: LET b=b-1
  50 IF STICK (1,1)=4 THEN LET a
=a-1
  55 IF a>255 THEN LET a=255
  57 IF STICK (1,1)=10 THEN LET
b=b-1: LET a=a+1
  60 IF STICK (1,1)=2 THEN LET b
=b-1
  65 IF b<0 THEN LET b=0
  67 IF STICK (1,1)=9 THEN LET a
=a+1: LET b=b+1
  70 IF STICK (1,1)=8 THEN LET a
=a+1
  75 IF b>175 THEN LET b=175
1000 GO TO 30
9999 SAVE "draw" LINE 10
```

```
  10 PRINT "DRAW2 THIS DOES NOT
CHECK FOR    BORDER"''''''"HIT AN
Y KEY TO START": PAUSE 0
  12 CLS
  15 PRINT "where do you want to
 start line at?"
  25 INPUT q: INPUT w
  26 CLS
  27 PLOT q,w
  30 IF STICK (1,1)=5 THEN DRAW
-1,1
  40 IF STICK (1,1)=1 THEN DRAW
0,1
  47 IF STICK (1,1)=6 THEN DRAW
-1,-1
  50 IF STICK (1,1)=4 THEN DRAW
-1,0
  57 IF STICK (1,1)=10 THEN DRAW
 1,-1
  60 IF STICK (1,1)=2 THEN DRAW
0,-1
  67 IF STICK (1,1)=9 THEN DRAW
1,1
  70 IF STICK (1,1)=8 THEN DRAW
1,0
1000 GO TO 30
9999 SAVE "draw2" LINE 10
```

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